DNV·GL

Certificate No:
TAS00001VR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gangway

with type designation(s)
Offshore gangway L-Type V4

Issued to
Ampelmann Operations B.V.
Delft, Zuid-Holland, Netherlands

is found to comply with
DNV GL standard DNVGL-ST-0358 – Certification of offshore gangways for personnel transfer

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Høvik** on **2019-02-13**
This Certificate is valid until **2024-02-12**.
DNV GL local station: **Rotterdam, Product Certification /Verification**

Approval Engineer: **Florian Teica**

for **DNV GL**

Aldo Matteucci
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

Product: 12m telescopic Offshore gangway
Product Name: L-Type V4 Gangway

Application/Limitation

Categorization: TYPE 2 Offshore gangway with motion compensating system.

Operational		
Configuration		supported at both ends (bumper/constant push mode, see #1)
Live Load (LL)		240 kg (2 persons)*
Maximum operational length**		12.5 m
Minimum operational length**		8.5 m
Bumper/push force setting @ tip		10kN
Maximum force at luffing and slewing actuators		1.5kN
Slewing range		+/- 135deg relative to nominal working position, see doc no. KDXE7SUZAFNU-1556644521-525 Rev B "Basis of design"
Luffing range		+/- 17deg from horizontal
Roll range		+/- 12deg from vertical
Maximum static heel		+/- 5deg
Maximum static trim		+/- 2deg
Telescopic hook max load***		8.65kN
Wind speed (at gangway location)		20 m/s
Vessel accelerations****	Vertical	±2,9m/s^2 (in addition to gravity)
	Longitudinal	±1,18m/s^2
	Transverse	±1,4m/s^2
Parked / Transit / Survival		
Configuration		Bridge supported and secured in boom rest
Live Load		-
Maximum Length*		Gangway fully retracted
Wind speed (at gangway location)		51.5 m/s
Vessel accelerations****	Vertical	±9,81m/s^2
	Longitudinal	±2,94m/s^2
	Transverse	±6,87m/s^2

Design temperature -20°C

Self weight of components: see "Basis of design" KDXE7SUZAFNU-1556644521-525 Rev B

Fatigue limitations:

Lifetime (structure): 15years
Load spectrum is defined in Appendix X, 16033-20-RPT-01001-01

*) 1 person is allowed at the tip and 1 in the middle of the gangway
**) measured from the luffing hinge to the outmost part of the gangway tip, excluding safety length

***) The telescopic hook functionality is described in report no KDXE7SUZAFNU-1556644521-11448 "Structural verification telescopic emergency hook L-Type V4"
****) relative to the vessel axis; the approval is based on the assumption that the skid's longitudinal axis is paralel with the vessel's longitudinal axis.

The operational limitations defined above have been provided by Ampelmann, data procedures adopted for estimating which have not formed part of the this review. It is the end user's responsibility to ensure that these are never exceeded during service.

It has been confirmed by the designer that the flow of people will be continuously monitored and regulated throughout the period in which the gangway is in operational / working condition, thus preventing the load on the gangway to exceed the above defined LL at any given time.

The system drawings and documents are approved with respect to DNVGL-ST-0358 Offshore gangways, September 2017 and relevant parts of:
- DNVGL Rules for Classification of Ships/High Speed, Light Craft and Naval Surface Craft.
- DNVGL-RU-SHIP-Pt.4 Ch.8 Electrical Installations.
- DNVGL-RU-SHIP-Pt.4 Ch.9 Control and Monitoring Systems

Software revision (at the time of issuance of the Type Approval Certificate).
PLC: LV4_V1-A_C1
MRU: Firmware 4v8_2

When the type approved software is revised (affecting all future deliveries), the updated software version documentation shall be submitted to DNVGL for evaluation. If the changes are judged to affect functionality for which rule requirements apply, a new functional/failure test may be required. The Type approval certificate may have to be renewed to identify the new software version.
All changes in software shall be recorded as long as the system is in use on board. Documentation of major changes shall be forwarded to DNV GL for evaluation and approval before implemented on board. Software and hardware change handling shall be as per DNVGL-RU-SHIP Pt.4 Ch.9 Sec 1.5.

The Type Approval is not covering any mechanical, electrical or hydraulic components which, for certification, shall be provided with certificates as per DNVGL-ST-0358 tables 2-2 and sec 5.14, 5.15 and 5.17.
In addition, the following shall also apply:
- Passive luffing support cylinder, this shall be provided with design approval and manufacturer product certificate
- The telescopic belts shall be provided with manufacturer product certificate
- The roll actuator shall be provided with separate DNVGL design approval and manufacturer product certificate.

Approval assumptions

1. While in connected/push mode, the gangway shall always be supported in vertical (Z-axis) direction. It has been confirmed that the support condition will not be friction dependent and that is rotation free.
2. No persons will be present on the gangway during deployment/retrieval phases of the gangway operation
3. During transit/survival/parked position, the L-Type V4 gangway will be supported and secured in a boom support.
4. The sheaves for the telescoping system shall be inspected for damage and changed (if deemed necessary) after each emergency case experienced by the gangway. The spline shaft will be continuously greased to avoid corrosion.

Type Approval documentation

Tests to be carried out

Each gangway shall be tested in accordance with DNVGL-ST-0358 Section 7 in the presence of a DNVGL Surveyor.

Marking of product

Each gangway shall be marked in accordance with DNVGL-ST-0358 Section 7.4.

Periodical assessment

For retention of the Type Approval, a DNVGL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.

END OF CERTIFICATE